THE WALTER AND ELIZA HALL INSTITUTE OF RESEARCH IN PATHOLOGY AND MEDICINE

SEVENTH ANNUAL REPORT

1925-26

Melbourne :
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1926

STAFF.

Director:

C. H. KELLAWAY, M.C., M.D., M.S. (MELB.), M.R.C.P. (LOND.)

First Assistant: GORDON CAMERON, M.B., B.S. (MELB.)

Bacteriologist and Serologist: MISS F. E. WILLIAMS.

Director's Secretary and Librarian: MISS BERTHA BARRETT.

Cancer Research Scholar: THOS. CHERRY, M.D., M.S. (MELB.)

Part-Time Workers:

H. R. DEW, M.B., B.S. (MELB.), F.R.C.S. (ENG.), F.A.C.S., Honorary Out-Patient Surgeon to the Melbourne Hospital.

J. F. CHAMBERS, M.B., B.S., M.R.C.P. (LOND.), Honorary Physician to the Austin Hospital, Medical Clinical Assistant to the Alfred Hospital.

C. J. O. BROWN, M.D., B.S. (MELB.), F.R.C.S. (ENG.), Acting Honorary Out-Patient Surgeon to the Alfred Hospital, Honorary Out-Patient Surgeon to the Austin Hospital.

C. H. SEARBY, B.SC., M.D., M.S. (MELB.), F.R.C.S, (ENG.), Honorary Out-Patient Surgeon to the Children's Hospital, Clinical Assistant to the Melbourne Hospital, Demonstrator in Anatomy in the University of Melbourne

J. MONAHAN LEWIS, D.D.SC. (MELB.), Late Lecturer in Dental Surgery and Pathology in the University of Melbourne.

K. D. FAIRLEY, M.D. (MELB.), M.R.C.P. (ENG.), Honorary Physician to the Austin Hospital, Honorary Clinical Assistant to Medical Out-Patients at the Melbourne Hospital.

Members of the Staff appointed by the Hospital:

PROFESSOR PETER MACCALLUM, M.C., M.A., M.SC., M.B., Ch.B., D.Ph., Honorary Pathologist to the Melbourne Hospital

C. H. MOLLISON, M.B., B.S. (MELB.), M.R.C.S. (ENG.), Honorary Assistant Pathologist to the Melbourne Hospital.

KEITH ROSS, M.B., B.S. (MELB.), Senior Resident Pathologist.

MISS B. SPLATT, B.SC. (MELB.), Bio-Chemist.

MISS CECIL MAUDSLEY, B.SC. (MELB.), Electro-Cardiographist

G. M. TALLANT, M.B., B.S. (MELB.), Pathological Registrar.

The Seventh Annual Report

OF THE

Walter and Eliza Hall Institute of Research

July, 1926.

This year definite steps have been taken towards moving the Melbourne Hospital from its present site to a new area in immediate proximity to the University, and plans are being laid to build a large medical centre in which all the University medical departments will be housed, and which will be connected directly with the new hospital by means of a subway. The hospital will be enlarged, and a portion of it will become the University Hospital. If these proposed changes take place, the Institute will also be moved from the site which it at present occupies, and in its future position its closer connection with the University and with the Institute of Veterinary Research cannot fail to greatly enhance its usefulness. It is a subject for congratulation to the Alfred Hospital that, owing to the generosity of Thomas Baker, Esq., an institute similar to this one has been founded there.

The Institute has recently suffered a great loss in the death of Sir Harry Allen, late Professor of Pathology in the University of Melbourne. It was largely owing to his inspiration that the Hall Trustees decide to provide the funds for the foundation and maintenance of this Institute. He acted as Honorary Director from 1916 to 1919, when Dr. S. W. Patterson was appointed, and until his final illness was an active member of the Board. The Institute owes much of its progress to his wise counsel and unfailing interest.

We have for a long time recognised that a research department of bio-chemistry was essential to the further development of the Institute. This year the Chairman of the Board, Sir Aaron Danks, is attempting to raise an endowment fund to cover the expenses of such a department. The fund was opened by the Chairman by a gift of £500 and a promise of a similar amount, and has been augmented by gifts of £500 from Sir William McPherson, Randolf Alcock, Esq., and Mrs. A. Brown; of £250 from Mrs. Moran; and £100 from Howard Smith, Esq., and Mr. and Mrs. James Alston. It is hoped that during the course of the next year £30,000 may be obtained for this purpose. The Edward Wilson Trustees have given us a sum of £1,500, and the Felton Bequest £500, to be used for the current expenses of the new department, and steps are being taken to secure the appointment of a bio-chemist for two years pending the completion of the endowment fund.

The personnel of the Institute has not changed greatly during the year, though, owing to a serious illness, we have been deprived for some months of the services of Miss F. E. Williams. She has now happily recovered, and will shortly be back at work. Mr. Amies left us in March to do some further work in England. Dr. Chambers, who for some years has carried out in a voluntary capacity the routine basal metabolic determinations of the Hospital, will shortly be leaving us, and the Hospital has appointed Miss Maudsley to do this work in addition to the routine electro-cardiography, which has now been taken over by the Hospital. Mr. Henry Searby, F.R.C.S., has joined the staff of the Institute as a part-time worker, and Dr. J. Monahan Lewis is doing research here in dental pathology. Dr. Keith Fairley, who returned from England in June of last year, has also been engaged in work at the Institute.

The Work of the Institute.

Hydatid Disease.

Mr. Dew has continued his researches upon this disease, and at present is engaged in compiling the materials for an authoritative work on the subject. In this, the prevalence, pathology, symptomology, diagnosis and treatment of hydatid disease will be discussed in detail, and, in addition to much other recent work, the researches carried out at this Institute will be summarised.

He has also been gathering data for a survey of the incidence of the disease in Australia during the last ten years, and in this connection our thanks are due to many medical practitioners who have sent us particulars of the hydatid cases with which they have met during this period.

Mr. Dew has published during the year two papers in which are embodied his observations on daughter cyst formation. It seems clear that this phenomenon is due to interference with the normal development of the cystic stage of the parasite, and must be regarded as an expression of the activity of its germinal cells when they find their vitality menaced and the continued production of scolices impossible. Mr. Dew has come to the conclusion that daughter cysts usually arise by progressive evolution of the cells of the original germinal membrane or from brood capsules, though more rarely they may develop from scolices. Grand-daughter cysts may arise from thin-walled cysts by external permeation at weakened parts of the laminated coat with secondary exclusion of the pouch. Exogenous daughter cyst formation, as usually described, does not occur. Secondary echinococcosis may occur in the abdomen, in the pleura or in operation wounds as the result of implantation of daughter cysts, brood capsules or scolices. The explanation of most cases of multiple cysts in the heart, lungs and brain is to be found in embolism following the intra-vascular rupture of cysts.

In a third paper he has made an interesting comparison of the alveolar form of hydatid disease as found in man in other countries with the multi-locular form which so commonly occurs in the herbivora.

Mr. Dew's further researches have been concerned with some problems of hydatid anaphylaxis and of the rarely-occurring hydatid cysts of the brain. His papers on these aspects of the hydatid question will be presented at the forthcoming Australasian Medical Congress.

The routine serological diagnosis of hydatids by complement fixation tests have been carried out by Miss Williams, and during her absence by Dr. Keith Ross. Our experience of this test and of the intradermal reaction has been greatly enlarged. The Director, with Dr. Keith Ross and Dr. Wettenhall, has been carrying out some further experiments on skin sensitiveness to hydatid fluid.

Dr. Cameron has made a short study of the enzymes of the parasite in its cystic stage. He finds that whereas hydatid fluid is inert, enzymes—for the most part diastatic—are present in the cyst wall. Fat-splitting and proteolytic enzymes are also present. He has suggested that in hydatid cysts, both in the liver and elsewhere, glycogen may play an important part in nutrition, and that glycogenolysis may account for the variable amount of sugar found in cyst fluid.

DEW, H. R.:

"Daughter Cyst Formation in Hydatid Disease: Some Observations on its Causation and Effects."

Med. Jour. Aust., Oct. 24, 1925.

DEW, H. R.:

"The Mechanism of Daughter Cyst Formation in Hydatid Disease."

Med. Jour. Aust., April 24, 1926.

DEW, H. R.:

"Observations on Hydatid Disease in the Herbivora (Echinococcus Multilocularis) and its Relationship with Echinococcus Alveolaris."

(In the Press.)

CAMERON, G. R.:

"A Note on the Enzymes of the Hydatid Cyst."

Aust. Jour. Exp. Biol. and Med. Science, Vol. 3, 1926.

Bilharzia.

Through the courtesy of Dr. Neil Fairley we were able to procure some bilharzia antigen, and Miss Williams has carried out complement fixation tests on a number of cases of this disease which resulted from the Great War. In this work we have had the co-operation of Dr. Lionel Bull, Director of the Government Laboratories at the Adelaide Hospital, and Dr. Keith Inglis, of the Sydney Hospital, who have collected and forwarded to us blood from patients in other States. The great majority of these cases, many of whom appear to be clinically cured, still give positive fixation reactions. The results of this work have not yet been published. Our thanks are also due to Dr. Mervyn Holmes, D.S.O., of the Commonwealth Health Service and to Dr. Fetherstone, of the Repatriation Department, for making it possible for us to get into touch with these cases.

Focal Infection.

This year the Director has been engaged in the study of a number of cases of nephritis and arthritis from the point of view of focal infection. About 40 strains of streptococci have been isolated in pure culture from animal lesions produced by the injection of mixed cultures from teeth, tonsils and other presumed foci. The investigation of these strains is now in progress, and an attempt is being made to see to what extent elective localisation may be invoked to explain the results of Rosenow and other workers. This work was undertaken at the instance of Dr. S. V. Sewell, who obtained several donations for the expenses of the research. In this connection our thanks are due to Mrs. J. S. Fraser, who contributed £50, and to Mr. Sydney Stott, who donated £10 for this purpose. This opportunity is taken of expressing our thanks to Drs. Stawell, Sewell, Turnbull, and Johnston for allowing us to investigate private cases.

Ascending Infections.

Dr. Kellaway, Dr. Brown and Miss Williams have shown that in guinea pigs, when the urethra is partially obstructed or the nervous control of the bladder disorganised, ascent of micro-organisms or pigment particles to the pelvis of the kidney occurs regularly within two to three hours. This ascent cannot be explained by blood or lymphatic spread, but takes place along the lumen of the ureter. In other animals investigated such ascent is very infrequent.

KELLAWAY, C. H.,
BROWN, C. J. O. and
WILLIAMS, F. ELEANOR:

"The Paths of Renal Infection."
(In the Press.)

Rabbit Epidemic.

During the year we unfortunately had an epidemic among our stock rabbits due to an organism closely allied to the necrosis bacillus of Schmorl and to that described by Beattie, Yates and Donaldson. The epidemic was of short duration, and was speedily under control. Dr. Cameron and Miss Williams, who were associated in the investigation of its cause, have published a short paper describing the cultural characteristics of the infecting organism, and the appearance of the lesions which it produces.

CAMERON, G. R. and
WILLIAMS, F. E.:

"An Epidemic Affecting Stock Rabbits."
Jour. Path. and Bact., Vol. 29, No. 2, 1926.

Typhoid Infections.

During the year there have been an unusually large number of patients with enteric infections in hospital. Dr. Keith Ross has placed on record an interesting case of typhoid, in which the organism was isolated at autopsy, but in which there were no agglutination reactions during life. Drs. Wright Smith and Ashton have recorded a study of three cases of para-typhoid B—a very unusual disease in this country—which occurred in one family, and were fully investigated at this Institute.

ROSS, K. C.:

"An Unusual Case of Typhoid Fever."

Med. Jour. Aust., May 22, 1926.

WRIGHT SMITH and
ASHTON, G.:

"Reports of Three Cases of Para-Typhoid."

Med. Jour. Aust., July 3, 1926.

Bacillary Dysentery.

Miss Williams has been associated with Dr. Reginald Webster, the Pathologist to the Children's Hospital, in an investigation of bacillary dysentery in infancy and childhood. They studied 153 strains of dysentery bacilli recovered between July, 1922, and March, 1925, 121 of which were classified serologically. The 1922-23 group of 37 cases had been isolated at the Children's Hospital and classified by Miss Williams in association with Dr. S. W. Patterson, who was then Director of this Institute. For the study of the 1923-24 and 1924-25 groups Dr. Webster was alone responsible. The organisms were classified into four races of Flexner bacillus, and in the 1922-23 group nine examples of the Sonne bacillus were found. There seems to be little to choose between the mortality figures of the four different races, the death rate for all of them being in the neighbourhood of 50%.

WEBSTER, R. and

WILLIAMS, F. E.:

"Bacillary Dysentery in Infancy and Childhood."

Med. Jour. Aust., Dec. 5, 1925.

Internal Secretion.

Dr. Cameron and Mr. Amies have concluded their experiments on the effect of thyroid feeding on the oestrous cycle in guinea pigs and mice. They found that in the former animal there is a very marked change in the length of oestrus, but no striking increase in the duration of the whole cycle, whereas in mice the administration of thyroid extract caused an increase both in duration of oestrus and in the length of the cycle.

Dr. Cameron's further observations on the influence of thyroid feeding have shown that in the guinea pig there is hypertrophy of the pancreas, and an increase in the proportion of islet tissue. He is now engaged in an investigation of pancreatic regeneration, particularly as regards the Islet tissue, in a large series of animals, from half of which a portion of the pancreas has been excised. He is observing the effects also of daily injections of insulin and pituitrin upon both control and operated animals. Miss Beryl Splatt is assisting Dr. Cameron in some phases of this study.

CAMERON, G. R. and
AMIES, A. B. P.:

"The Effect of Thyroid Feeding on the Oestrous Cycle of the Guinea Pig and Mouse."

Aust. Jour. Exp. Biol. and Med. Science, Vol. 3, 1926.

CAMERON, G. R.:

"The Influence of Thyroid Feeding on the Islets of Langerhans in the Guinea Pig."

Jour. of Path. and Bact., Vol. 29, No. 2, 1926.

Cancer.

Dr. Cherry, the Grice Cancer Research Scholar of the Melbourne University, has continued his experimental investigation of the relation between tubercle and cancer. His experiments with guinea pigs at this Institute and with dogs at the Institute of Veterinary Research have as yet been wholly negative. In mice the results which follow the introduction into the skin and mucous membrane of minute doses of living tubercle bacilli have proved to be extremely interesting, and the lesions which have been produced in his experimental animals are being very carefully studied by serial sections. His work is proving particularly interesting in regard to the results of tuberculous infection in mice.

Mr. Henry Searby, on his return from England, joined the staff of the Institute in a part-time capacity, and is engaged on a survey of the regional incidence of cancer in the hospital population.

During the year Mr. Dew has published a monograph on "Malignant Disease of the Testicle," which embodies the chief facts put forward in the essay with which he won the

Jacksonian prize of the College of Surgeons in 1923. The author's clear and concisely stated views are based upon a large collection of material studied while he was First Assistant and afterwards Acting Director of this Institute.

DEW, H. R.:

"Malignant Disease of the Testicle."

London, H. K. Lewis & Co., 1925.

Bio-Chemistry.

Miss Splatt has, as usual, carried out the routine biochemical work of the Hospital, and has also been associated with Dr. Cameron in some of the investigations which he is now making. With Dr. Fairley she has compared the Hench-Aldrich method of doing blood ureas with the McLean method in routine use in the Hospital.

FAIRLEY, K. D. and
SPLATT, B.:

"A Simple Technique for the Estimation of the Blood Urea: The Hench-Aldrich Method."

Med. Jour. Aust., May 8, 1926.

SPLATT, B.:

"A Note on the Preservation of Samples of Blood for Sugar Estimations."

(In the Press.)

Dental Pathology.

For some months material has been collected here for the study of the histo-pathology of chronic inflammatory conditions of the peridental membrane. Dr. J. Monahan Lewis, in collaboration with Professor F. C. Wilkinson, is now actively engaged in this investigation. The results of this work should throw new light on the pathology of pyorrhea and apical abscesses of the teeth.

Routine Work.

The routine serological work of the Institute, which has been carried on by Miss F. E. Williams, and in her absence by Dr. K. Ross, has consisted, in addition to hydatid tests, of a large number of complement fixation tests for tuberculosis, gonococcal and syphilitic infections.

Dr. Chambers has continued to carry out the routine basal metabolic investigations. The pathological work of the Hospital has been carried on by the Senior Resident Pathologist and the Pathological Registrar, and Dr. Mollison has, in addition to giving opinions on the routine diagnostic sections for the Hospital, always been available as a consultant when difficult questions have arisen.

The Electro-Cardiograph Department.

Dr. Turnbull's guarantee to the electro-cardiograph department expired on 9th May, and the Hospital is now taking over the Department. Dr. Turnbull has very generously donated the balance of the guarantee towards the funds of the Institute. In addition to carrying on the electro-cardiographic work, Miss Maudsley has also done the photography of macroscopic and microscopic preparations for the Institute.

Other Activities.

The Institute staff have co-operated during the earlier months of this year with the Commonwealth Serum Laboratories in procuring serum from cases of poliomyelitis which have recovered from the disease. This work, which was financed by the City Council and initiated by Dr. Sinclair, has now ceased, as there is no immediate likelihood of an epidemic, and a considerable stock of serum is in hand. The machinery is in readiness in the event of any outbreak in the future.

Teaching.

Dr. Kellaway has given his usual course of lectures at the Institute to fifth year students, and practical clinical pathological teaching has been carried out throughout the year by the Pathological Registrars to fifth year men in small groups. In addition to post-graduate teaching under the auspices of the Melbourne Permanent Post-Graduate Committee, several graduates have come to the Institute for practical training in clinical pathological and bio-chemical methods.

Professor MacCallum has continued the practice which he initiated last year of giving post-graduate demonstrations of macroscopic and microscopic pathology. These demonstrations have been greatly appreciated.

The Museum.

Dr. Ross and Dr. Cameron have continued their work in building up the hospital museum of pathological specimens, which is housed in the Institute. It is gradually becoming more complete, and contains now some 300 colour-preparations. These are fairly representative, and are already of great value for teaching purposes.

The Library.

The library, which was founded in 1924 through the generosity of the Edward Wilson (*The Argus*) Trust, has made definite advances in the direction of completion this year, largely owing to the activity of Miss Baverstock, the Librarian of the National Institute for Medical Research, to whom our thanks are due for her continued interest. Several new journals have been subscribed to, and the principle is being followed of taking those journals which are not obtained by the other medical libraries in Melbourne. We are greatly indebted to the following for gifts of periodicals: The Ministry of Health, London; The National Institute for Medical Research, London; The Rockefeller Institute, New York; The American College of Surgeons; The Royal Society of Medicine, London; Dr. Neil Fairley; Dr. Grover.

FINANCIAL STATEMENT FOR YEAR ENDED 30th JUNE, 1926.

Receipts.

Balance brought forward, 18th July 1925	£3,777	2	0
1. Trustees Walter and Eliza Hall Trust	3,100	0	0
2. University of Melbourne	750	0	0
3. Interest on Investments	116	12	9
4. Felton Bequests Committee (donation)	500	0	0
5. J. R. MacPherson Fund (donation)	100	0	0
6. S. Stott (donation)	10	0	0
7. Trustees Edward Wilson (donation)	1,500	0	0
8. Melbourne Hospital (a/c. cost materials)	125	0	0
9. Fees and Donations, Apparatus A/c.	306	4	8
	£10,284	19	5

Expenditure.

1. Apparatus	£279	18	5			
2. Materials	340	18	4			
3. Salaries and Wages	3,921	18	7			
4. Repairs to Apparatus	7	11	10			
5. Fittings	111	6	3			
6. Repairs to Buildings	87	5	0			
7. Sundries (Laundry, Stationery, Fares, etc.)	285	5	7			
				5,034	4	0
Amount Advanced to Library A/c.				67	2	6
				£5,101	6	6
Balance:—						
Current A/c., Bank of New South Wales	£1,623	12	11			
Fixed Deposits, do., Investments	3,500	0	0			
Cash in Secretary's Trust A/c., E.S. & A. Bank	60	0	0			
				5,183	12	11
				£10,284	19	5

LIBRARY ACCOUNT.

Balance brought forward, 18th July, 1925	£2,134 10 5	1. Journals, etc.	£241 7 5	
1. Interest from Investments	130 0 0	2. Fittings	90 5 6	
2. Advance from General Fund	67 2 6			£331 12 11
		Balance, Investments		2,000 0 0
	£2,331 12 11			£2,331 12 11

ELECTRO-CARDIOGRAPH ACCOUNT.

Balance brought forward, 18th July, 1925	£51 12 5	1. Salaries	£142 10 0
1. Donations	198 6 0	Balance, Current A/c., Bank of New South Wales	107 8 5
	£249 18 5		£249 18 5

ENDOWMENT ACCOUNT.

1. Donations	£2,955 5 0	Balance:—		
		Current A/c., Bank of New South Wales	£987 0 9	
		Investments	1,968 4 3	
				£2,955 5 0
	£2,955 5 0			£2,955 5 0

I have to report that I have completed the audit of the books and accounts of the Institute for the period ended 30th June, 1926. I have verified all receipts, and have had vouchers produced for all disbursements. All information and explanations required have been given. The Statement is a correct statement of Receipts and Expenditure as revealed by the books of the Institute.

(Sgd.) W. M. JARVIE, F.F.I.A.,

21st July, 1926.